UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/072,784	05/06/98	HASKELL	B

LM31/0706

S. H. DWORETSKY
AT&T CORP.
P.O. BOX 4110
MIDDLETON NJ 07748

EXAMINER	
CHEN, W	
ART UNIT	PAPER NUMBER
2724	6

DATE MAILED: 07/06/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/072,784	Haskell et al.
Examiner	**Group Art Unit**
Wenpeng Chen	2724

☒ Responsive to communication(s) filed on *Apr 27, 2000*

☒ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) *1-28* is/are pending in the applicat

Of the above, claim(s) *16-19 and 23* is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-15, 20-22, and 24-28* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

Examiner's responses to Applicant's remark

1. Applicants' arguments filed on 4/27/2000 have been fully considered but they are not persuasive. Applicants' arguments with respect to all the pending claims have been considered but are moot in view of the new ground(s) of rejection due to the amendments.

Claim Rejections - 35 USC § 112

2. Claims 4-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 4-7, the phrase "may be discarded" renders the claim(s) indefinite because the phrase is indefinite to discard the data or not, thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1, 4-5, 7, 11, 14-15, 22, 24-25, and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Chang et al. (US patent 6,025,877.).

Chang teaches a method of encoding a video data stream, comprising the steps of:

-- identifying video objects (VO) from a video data stream; (Fig. 2, element 21; column 3, lines 10-26)

-- coding each video object as video object layer (VOL) data and video object plane (VOP) data; (Fig. 2, elements 12; column 3, lines 10-26; It is clearly seen that VOPs are coded in Fig. 2. The passages in column 1, line 58-62 and column 4, line 18-27 teach that the video objects are coded as VOL, too.)

-- assigning a priority to the video object layer data of each video object; (Fig. 2, element 21; column 3, lines 10-26)

- wherein the priority is assigned based on the importance of the information contained in the VOL data; (column 3, lines 57-67)

-- assigning a second priority to each from a plurality of VOPs of a video object and including the second priorities in the encoded bitstream; (column 4, lines 27-35; The I, P, and B are the second kind of priority.)

-- encoding the video object layer data, the video object plane data and the priority data in the bitstream; (column 1, lines 25-34)

-- wherein information related to VOL data having a high priority is transmitted before information related to VOL data having a low priority; (column 3, lines 57-67)

-- the bitstream is output to a channel in which the priority is used to identify some data which may be discarded in the event of channel congestion, loss of channel bandwidth, or limited process resources. (column 3, lines 32-40, 58-64; Fig. 5; Fig. 5 teaches to transmit parts of information according to the priority and according to various conditions. A low current transmission speed is an indicator of channel congestion. The transmission speed in a network assigned to the system is varied. When the speed is reduced, the channel bandwidth is lost. It is also representing a limitation to the overall process resource of the receiving part.)

Chang also teaches a method of decoding a video data stream, comprising the steps of:

-- receiving an encoded bitstream, the encoded bitstream containing VOL data and VOP data corresponding to a VO, the VO identified from a video data; (Fig. 2; column 3, lines 10-32)

-- identifying a first VOL and a second VOL in the encoded bitstream, the first VOL having the first priority and the second VOL having the second priority lower than the first priority; (Fig. 2; column 3, lines 10-32, lines 58-68; Because the bitstream is transmitted in the order of the priority of VOLs. The VOLs with their priorities are identified.)

-- decoding the first and second VOLs to reconstruct video information contained in the bitstream. (Fig. 2; column 3, lines 10-32, lines 58-68)

Claims 24 and 25 are the corresponding apparatus claims of the method Claims 1 and 15, respectively. Fig. 2 teaches the coding system of Claim 24 and decoding system of Claim 25 with the parts to carry out the steps cited above. Claims 24 and 25 are similarly rejected.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-3, 8-10, 12-13, 20-21, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Das et al. (US patent 5,896,176 listed in paper #3) In view of Chang et al. (US patent 6,025,877.)

Das teaches a method of encoding video information, comprising the steps of:

-- identifying VOs from a video data stream; (column 11, lines 32-37 and 55-63; column 12, lines 42-59; column 14, lines 43-53.)

-- coding each VO as VOL data and VOP data; (column 14, lines 38-53; column 14, lines 35-53; column 15, lines 1-8 and 28-66; Fig. 5c; The objects in the I, P, P sequence forms a video object layer. The object in each frame is a VOP. When an object is assigned to be interest, an associated video object plane is formed as shown in Fig. 5c.)

-- assigning a priority to the regions of interest which can be objects; (column 11, lines 55-63; the map indicating priorities; column 12, lines 42-59)

- wherein the step of assigning the priority is optional; (The language in Claim 8 makes an alternative limitation: the step is performed or not performed. As discussed above, the step being performed thus meets the requirement. Furthermore, the manipulation and scalability recited in column 2, lines 13- 36 inherently teach that the step can be selectively not performed.)

-- encoding the VOL data, the VOP data, and the priority data in a bit stream; (column 11, lines 32-37 and 55-63; column 15, lines 1-8 and 28-66)

- wherein the video information is coded into a bitstream for low bitrate transmission; (column 3, lines 62-67)

- wherein the coding is performed according to the MPEG-4 standard; (column 4, lines 1-3)

- wherein the bitstream is a visual bitstream and the assigned priories of data is carried out by a specific codeword; (column 11, lines 55-63; column 17, lines 30-55; A video bitstream is a visual bitstream. The priority map is at least represented by binary numbers which are specific codewords.)

- wherein the bitstream is a systems bitstream and the assigned priories of data is included as part of an object descriptor in the systems bitstream; (column 12, lines 43-59; Because the region of interest could be macroblocks covering objects, the priority map is included as part of the contour map which is an object descriptor. The passage in column 17, lines 30-55 indicates that the bit stream is a systems bitstream.)

-- wherein the step of assigning a priority is performed based on the importance of the information contained in the element; (column 12, lines 42-59)

-- wherein elements having a high priority is performed before being performed for element having low priority; (The passage in column 11, lines 32-37 teaches selecting a region for coding. The passage inherently teaches a region of higher priority is coded first. The passage in column 11, lines 55-30 teaches that more than two priorities are assigned to regions. Even if the lowest region is not coded, there are at least two regions to be coded. The region of highest priority is always selected to be coded before the region of the second high priority.)

-- wherein encoding of elements having a low priority is not performed; (column 11, lines 55-63)

-- transmitting the bitstream, wherein information related to elements having a high priority is transmitted before information related to elements having a low priority. (transmission channel in Fig. 1; The passage in column 17, lines 30-53 teaches the required transmission sequence. The high priority data of the first object is sent first.)

Das also teaches the corresponding method of decoding encoded bitstream, comprising the steps of:

-- receiving the encoded bitstream, the encoded bitstream containing VOL data and VOP data corresponding to a VO, the VO identified from a video stream; (Fig. 1)

-- identifying a first VOL and a second VOL in the encoded bitstream, the first having a first priority and the second having a second priority lower than the first priority; (column 16, lines 39-45; column 15, lines 12-21; column 13, line 63 to column 14, line 18; column 7, lines 4-17; It is also well known in the art that a decoder is a mirror image of an encoder. All of the specific data attributes generated in an encoder are all inherently transferred to the corresponding decoder. The shape information provides the identification. For example, the lady and the background are the first and second elements, respectively.)

-- decoding the first VOL to reconstruct video information contained in the bitstream; (column 16, lines 39-45; column 15, lines 12-21; column 13, line to column 14, line 18; column 7, lines 4-17)

- wherein the bitstream is a visual bitstream and the assigned priories of data is carried out by a specific codeword; (column 11, lines 55-63; column 17, lines 30-55; A video bitstream is a visual bitstream. The priority map is at least represented by binary numbers which are specific codewords.)

- wherein the bitstream is a systems bitstream and the assigned priories of data is included as part of an object descriptor in the systems bitstream. (column 12, lines 43-59; Because

the region of interest could be macroblocks covering objects, the priority map is included as part of the contour map which is an object descriptor. The passage in column 17, lines 30-55 indicates that the bit stream is a systems bitstream.)

Das also teaches the corresponding medium that stores the instruction to carried out the above cited encoding and decoding steps. (Column 5, lines 11-23)

Although Das assigns a priority to a VO which can be considered as assigning a priority related to a VOL. However, Das does not explicitly assign a priority to VOL data and code VOL according the priority, because Das does not explicitly teach to code and transmit in the order of a set of VOPs which form a VOL.

Chang teaches a method of encoding a video data stream as discussed above, specifically comprising the steps of:

-- assigning a priority to the video object layer data of each video object; (Fig. 2, element 21; column 3, lines 10-26)

-- wherein information related to VOL data having a high priority is transmitted before information related to VOL data having a low priority. (column 3, lines 57-67)

It is desirable to receive fully the important information in the environment of variable transmission speed. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Chang's teaching of assigning a priority to the VOL (the I, P, P, sequence) of each VO of Das' data bitstream and to encode and transmit the VOLs according to the priority, because the combination optimizes the received image quality by receiving and decoding the VOL

according to the priority. In the combination, the VOL of high priority is encoded before the VOL of low priority. In some situation, the VOL of low priority is not encoded, because it is not to be transmitted. Also, the priority data are carried out by the codeword and included as part of an object description of Das's system.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (US patent 6,025,877) as discussed above, and further in view of Sikora ("The MPEG-4 Video Standard Verification Model," Thomas Sikora, IEEE Transactions on Circuits and Systems for Video Technology, vol. 7, no. 1, February 1997, pages 19-31.)

Chang teaches the parental Claim 1 as discussed above. Chang also teaches that the priority is used to identify some data which may be discarded in the event of channel congestion, loss of channel bandwidth, or limited process resources.

However, Chang does not teach that the priority data identifies which video object layer data may be discarded in the event of channel errors.

Sikora teaches a method of encoding a video data stream, comprising the steps of:

-- the bitstream is output to a channel in which some data may be discarded in the event of channel error. (pages 19-20; right column, page 23; the paragraph bridging the two columns in page 24; Content-based scalability decides data to be discarded. The robustness in noisy environment indicates MPEG-4's application in the event of channel error. The first paragraph in

page 20 specifically recites application of the content-based scalability in the noisy environment.) That means that the objects are selectively processed and transmitted.

It is desirable to code an image and receive fully the important information in the various environments, including a noisy environment having channel error. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Sikora's content-based scalability in a noisy environment to use the priority to identify which VOLs of Chang's system may be discarded, because the combination optimizes the received image quality in an environment with channel error by receiving and decoding the VOL according to the priority.

Conclusion

8. **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). The Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wenpeng Chen whose telephone number is (703) 306-2796.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

The art unit fax number is (703) 306-5406.

Wenpeng Chen

June 26, 2000